REMARKS

Claims 10, 17 and 18 have been amended to specify that the activated carbon has an average particle diameter of 100 to 600 μm, that the adhesive fiber is a water-swelling fiber and that the granular activated carbon containing sheet is integrally formed by wet bonding. The particle diameter is supported on page 14, line 1, of the specification. The other two amendments are limitations previously included in claim 21. No new matter has been added.

Claims 10-14, 17, 18 and 21-27 stand rejected under 35 USC 112, second paragraph, because the examiner find the phrase "and a layer containing no granular activated carbon on a first surface" indefinite. Specifically, the examiner states that this phrase "implies that a separate material is added to the sheet when the specification describes a single layered sheet wherein the surface of the sheet has no granular activated carbon." Claims 10, 17 and 18, which contain this phrase, have been amended to delete the phrase "a layer containing" from the claims. The claims as amended no longer imply a material separate from the single material. Accordingly, this rejection should be withdrawn.

Claims 10-14, 17, 18 and 21-27 stand rejected under 35 USC 103(a) as being unpatentable over JP-02135141 (hereinafter JP '141) in view of Douglas and Groeger. This rejection is respectfully traversed. Applicants have included a complete translation of JP '141 with this amendment.

Claims 10, 17 and 18 have been amended to specify that the activated carbon has an average particle diameter of 100 to 600 μm, that the adhesive fiber is a water-swelling fiber and that the granular activated carbon containing sheet is integrally formed by wet bonding.

The Examiner states that JP '141 discloses a gas adsorption sheet comprising activated carbon particles having applicant's claimed size, a supporting fiber and a water swelling adhesive fiber. All of the pending claims specify that the granular activated carbon-containing sheet has a surface zone containing no granular activated

carbon on one surface. JP '141 fails to disclose forming a surface zone containing no granular activated carbon formed by the sedimentation of the activated carbon as claimed by applicants. Further, in JP '141 the granular activated carbon used in the example is so small, and the supporting fiber described in the specification has such a thin fiber diameter, which can be calculated from the specific surface area, that a layer containing a granular activated carbon would be formed on the surface of the carbon containing sheet.

In the carbon-containing sheet claimed by applicants, the granular activated carbon is large enough to be sedimented at a high speed. In addition, the supporting fiber is thicker than a conventional fiber so that the fiber is sufficiently stiff and the number of fibers can be decreased. These characteristics allow the granular activated carbon to be sedimented among the fibers to form a surface zone containing the fibers without the granular activated carbon, while the agglomerated structure of the supporting fiber is maintained.

In addition, the carbon free zone as claimed is formed by sedimentation, whereas in conventional carbon sheets, such a layer is formed by thermal fusion or adhesion. Thermal fusion or adhesion can inhibit air permeability. Accordingly, the claimed carbon sheet has improved air-permeable properties as compared with carbon sheets produced by in the conventional manner.

The Examiner relies upon Douglas and Groeger to teach the carbon free zone as taught by applicants. Specifically, the Examiner states that it would have been obvious to produce a carbon sheet as taught by Douglas with a carbon free zone. The Examiner's assertion is incorrect since the manufacturing method taught by Douglas would not produce a surface layer free of granular activated carbon as claimed by applicants.

Douglas discloses using granular activated carbon with an average particle diameter of less than 40μm, which is much smaller than the carbon used by applicant, and the carbon is concentrated on the upper surface of the carbon sheet at the time of

wet formation. A carbon gradient is formed in Douglas by washing out the granular activated carbon from the bottom face (the wire side) to form a non-linear carbon distribution in the sheet as a whole (column 9, L.34 to 47).

Further, in the manufacturing method disclosed in Douglas, the concentration of granular activated carbon is decreased in the bottom face by washing out, so even if granular activated carbon flows out the bottom face, new granular activated carbon in approximately same amount is successively supplied to the periphery of the bottom face. Accordingly, some amount of granular activated carbon constantly exists in the bottom face.

Consequently, it is impossible to form a surface layer containing no granular activated carbon using the manufacturing method disclosed in Douglas. This is shown in FIG.2 and photograph 4 of Douglas, which shows that the carbon concentration is still about 20% in the low concentration side of the carbon sheet. Further Table 6 of Douglas shows that the concentration is between 27 to 39% in the low concentration side of the carbon sheet.

In Groeger the upper surfaces of the sheets in Fig.2 and Fig.3 show webs 33 and 43 containing no particle. However, these web layers are formed on a layer which is previously formed as a web 35 containing particles (column 11, L3-L10). Thus, webs 34 and 43 correspond to the upper layer of a laminated type sheet conventionally used. Groeger does not disclose a carbon free surface zone integrally formed as claimed by applicants. The carbon free zone disclosed in Groeger is a separate layer and would, accordingly, correspond to the air-permeable sheet of the present invention.

Accordingly, the surface zone containing no granular activated carbon, as claimed by applicants, can not be formed by the combination of Douglas, JP '141 and Groeger. Since all of the pending claims 10-14, 17, 18 and 21-27 contain a surface zone containing no carbon, the rejection of the claims as obvious in view of JP '141, Douglas and Groeger should be withdrawn.

For the foregoing reasons a notice of allowance is solicited.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 427972000110

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Respectfully submitted,

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